sit atop the levee and would maneuver onto the top of kickers, when necessary. Bank barbs, which are smaller than kickers, would extend up to 30 feet into the channel from the levee. Both type of structures would be embedded into the levee.

Photo 5-1. Bank Barb.

5.1.7 Eco Fences

Eco fences block, slow down, or deflect the force of the current during high-flow periods in order to protect existing islands and vegetation and to cause deposition of sediment where new vegetation may become established. Eco fences will allow the river to heal itself. Rather than the costly and disruptive process of placing sediments with heavy equipment, the river will be allowed to do the work through a natural process. See plates 2, 3, 4, and 5 for general eco fence locations. Eco fences would be placed at the front and sides of existing wooded islands to prevent/inhibit further soil and vegetation loss or placed in areas where soil and vegetation have already been lost to facilitate deposition and vegetation regrowth. As vegetation becomes established, it will further slow flow velocities and encourage accelerated sedimentation. Indirect aquatic habitat benefits would be gained as vegetation is reestablished. As the amount of vegetation increases, shade and material (such as leaves and insects that fall into the river, providing nutrients to river

organisms) would also increase while ensuring the future availability of large-woody debris input to the river.

Two different types of fences: piling eco fences (see photo 5-2, below) and rock eco fences, may be used. See plate 8 for detailed drawings. Piles would be driven and have interconnecting cables attached. Rock eco fences, constructed of riprap, would require excavation to key the structure into the cobble, gravel, and sand substrate. Excavated material would be scooped and transported off-site for upland disposal. Riprap would be trucked to the site and dumped directly into the excavation site. Riprap used to construct the rock eco fences will be large, angular rock, free of fine sediment.

Photo 5-2. Piling Eco Fence, with Accumulated Woody Debris.

5.1.8 Anchored Root Wad Logs

Anchored root wad logs consist of tree trunks with the root attached. Depending on placement, anchored root wad logs may provide additional resting habitat for cutthroat trout and other fish species. The 1989 Jackson Hole Debris Clearance Environmental Assessment found that, “local scour and fill is also evident adjacent to woody debris left in the channel following the 1986 flood.” Anchored woody debris

may also encourage sediment deposition and help establish new vegetation (see photo 5-2).

Anchored root wad logs would be obtained from along the river channel within the four project areas or from commercial sources. Logs would be transported to the installation site by either truck, rubber-tired skidder, or helicopter. See plates 2, 3, 4, and 5 for approximate locations. A backhoe may be used to level an area to place the logs so that the logs would have uniform bearing along the trunk and its root would be partially embedded. The logs would be fastened down with toggle bolt anchors. The anchors would be driven into the ground with a jackhammer and a jack would be used to pull up on the anchors locking them into place. The cable would be tied around the logs and cinched down to tighten the logs to the ground. (See photo 5-3.)

Photo 5-3. Naturally occurring root wad logs and accumulated organic matter (woody debris). This would be replicated by anchoring root wad logs. During periods of high flows the anchored logs would trap smaller woody debris.

5.1.9 Rock Grade Control

Rock grade control structures keep the river from eroding and destroying existing riparian areas. Riprap would be placed at specific areas where down-cutting of the